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FINAL REPORT

BN-25/GILDROY SITE
MUSSELSHELL COUNTY

DECEMBER 23, 1988

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MINING & CIVIL ENGINEERS

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FINAL REPORT

BN-25/GILDROY SITE
MUSSELSHELL COUNTY

DECEMBER 23, 1988

Prepared for:
Abandoned Mine Reclamation Bureau
Montana Department of State Lands
1625 Eleventh Avenue
Helena, Montana 59620

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BN-25/GILDROY AML MAINTENANCE PROJECT

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BN-25/GILDROY AML MAINTENANCE PROJECT

1 INTRODUCTION

1.1 PROJECT OBJECTIVES

Reclamation maintenance work was performed under the statewide maintenance program to restore an area previously reclaimed under the AML program (Old Divide Road Mine Sites - Phase II - 6/7/85). Per verbal authorization (7/25/88) from Ben Mundie of State Lands to Spectrum Engineering, a newly found subsidence hole was to be backfilled. Initial on-site observations revealed that two previously backfilled adits had eroded open, and settling of backfill in an air shaft had also occurred. Closing of the adits and backfilling of the sites was performed.

1.2 SITE DESCRIPTION AND LOCATION

The BN-25/GILDROY site area is located 18 miles south of Roundup, Montana.

The BN-25 mine-related features consist of a newly found subsidence hole and one adit which has reopened due to surface water erosion. The BN-25 site area is in the NE¼NE¼NW¼ of Section 25, Township 6 North, Range 26 East.

The Gildroy mine-related features consist of a reopened adit and settling of backfill in a previously reclaimed air shaft. These areas were initially reclaimed by the mine operator prior to the AML program. The Gildroy site area is adjacent to and north of the BN-25 site and located in the SE¼SE¼SW¼ and the SW¼SW¼SE¼ of Section 24, Township 6 North, Range 26 East.

The Vicinity Map, Figure 1, and the Site Map, Figure 2, shows the location of the site. Figure 3 depicts each mine related feature.

1.3 LAND OWNERSHIP

There are two surface owners involved in this project. They are:

T6N, R26E, Section 24:
Jack Carlson
236 Old Divide Road
Roundup, Montana 59072
(406) 323-1647

T6N, R26E, Section 25:
James L. Bishop, Director, Land Management
Glacier Park Company
P.O. Box 579
Miles City, Montana 59301
(406) 232-1274

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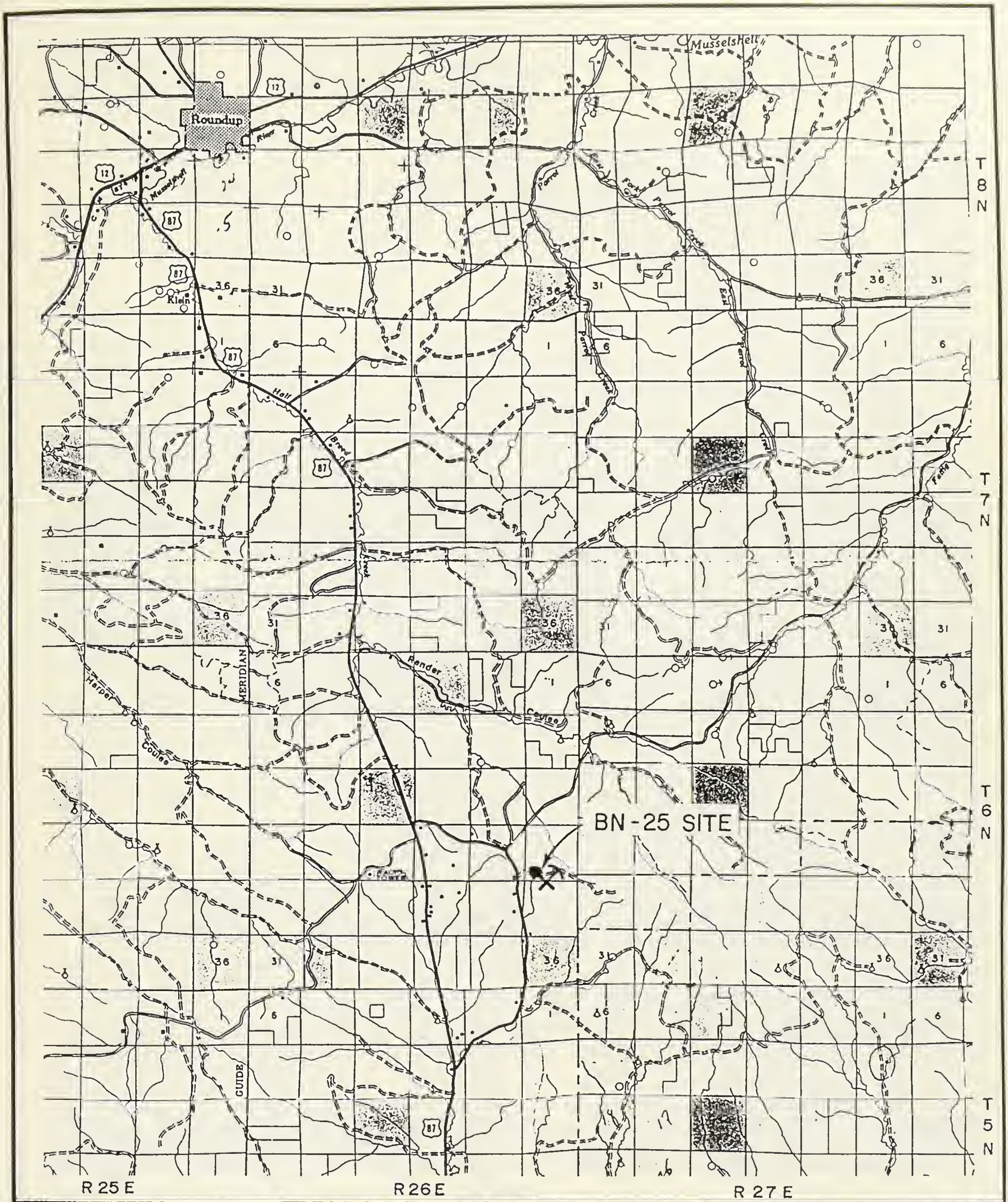


STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

VICINITY MAP

SITE BN 25
MUSSELSHELL COUNTY, MT; TOWNSHIP 6 N RANGE 26E
SECTION(S) 24- S1/2 S1/2, & 25-N1/2 N1/2
MAP SCALE: 1" = 2.5 Miles

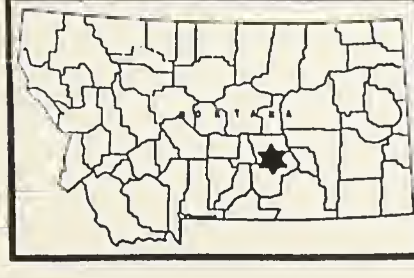
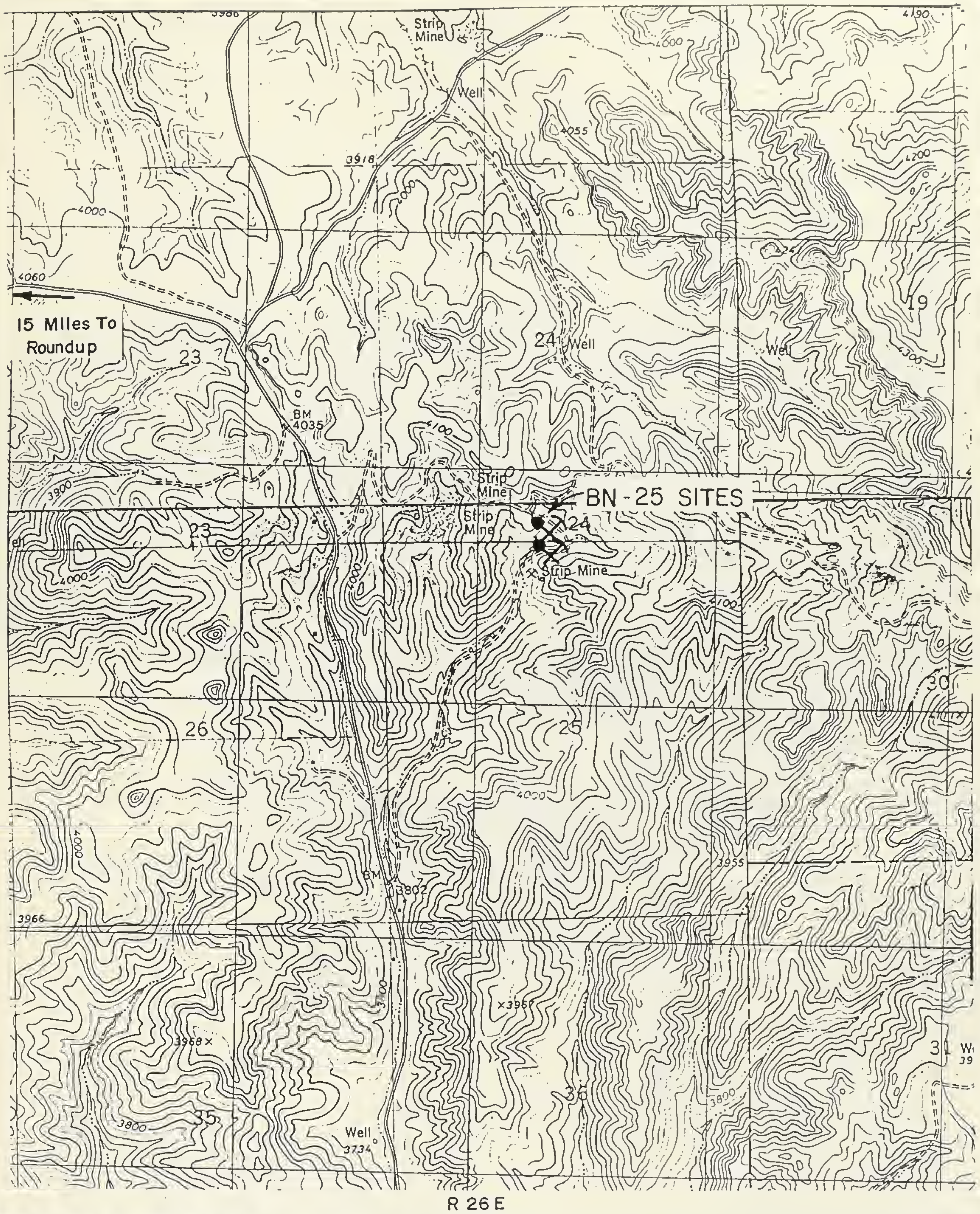


FIGURE 1



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ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

SITE MAP

N

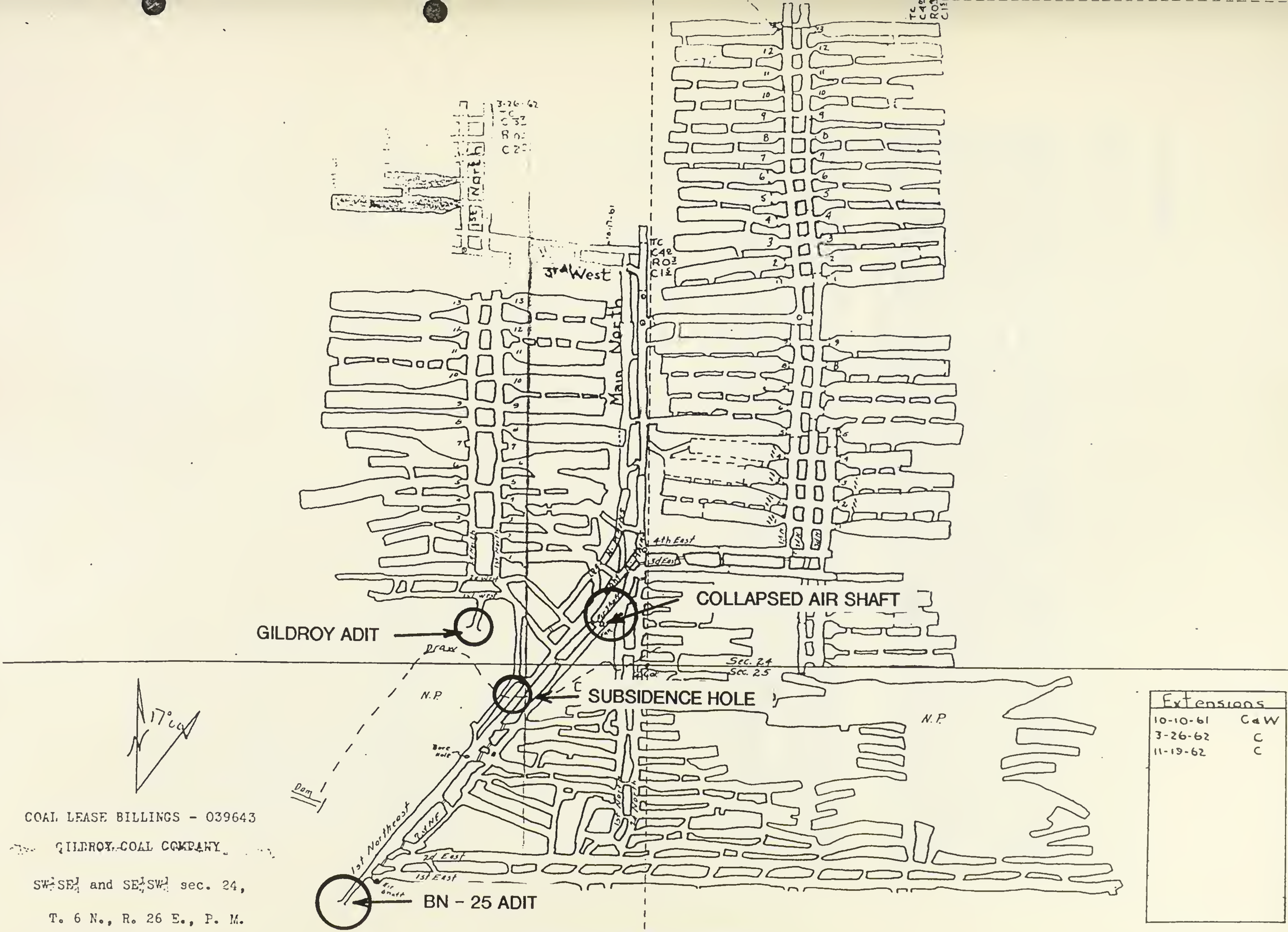
SITE BN - 25

MUSSELSHELL COUNTY, MT; TOWNSHIP 6N RANGE 26E

SECTION(S) 24 - S1/2 S1/2, 25 - N1/2 N1/2

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET PARK COULEE

FIGURE 2



COAL LEASE BILLINGS - 039643

GILDROY COAL COMPANY

SW¼SE¼ and SE¼SW¼ sec. 24,

T. 6 N., R. 26 E., P. M.

Scale 1" - 200'

FIGURE 3 - GILDROY MINE MAP

1.4 HISTORY

The BN-25/Gildroy maintenance features are part of the original Gildroy Mine.

The Gildroy Mine is an abandoned underground coal mine located in the Bull Mountain Coal Field near Roundup, Montana. This mine extended into both sections of land as described in Sections 1.2 and 1.3 above. The coal mined from Section 24 was under a federal lease while the coal in Section 25 was under a private lease with Northern Pacific Railroad. Operation of the mine by Gildroy Coal Co. occurred between 1945 and 1955 and was abandoned in 1966. Approximately 137,000 tons of coal were produced from this mine over it's life span. On-site observations indicate that following active mining, the mine's openings (adits and shafts) were closed by the operator dozing dirt into the openings until access was prevented.

The circled areas on the Mine Map, Figure 3, are those mine features addressed in this report. These features include two adit entries, an air shaft, and a subsidence (roof collapse) in the bottom of a drainage.

The BN-25 adit entry on the 1st Northwest entry was reclaimed by the Abandoned Mine Lands program in 1985 and has subsequently eroded open.

2 DESCRIPTION OF THE RECLAMATION MAINTENANCE PROJECT

2.1 SITE HAZARDS AND PROBLEMS

The BN-25/Gildroy site consists of four mine-related features. They are two eroded adit closures, one collapsed air shaft, and one subsidence (roof collapse) hole. Each feature is briefly described as follows:

The BN-25 adit (Photo 1) was the main entry into the Gildroy mine. The stratum overlying the adit entrance is chiefly sandstone buffs. As surface water from rain and snow runoff has flowed down over the sandstone buff, it has saturated the backfill of the previous adit closure and washed it down into the adit. The opening is approximately 1 foot high by 8 feet wide and extends into the adit for an unknown depth.

The Gildroy adit (Photo 2) is thought to be a second adit entry that was developed in the coal outcrop as the mine expanded it's mining to the west. It is thought that this adit was initially dozed closed by the mine operators when the mine was abandoned. This adit is situated within a small drainage and surface water runoff has eroded and washed the backfill into the adit. The opening is approximately 4 feet high by 6 feet wide and extends an unknown depth into the mine.

The subsidence hole (Photo 3) occurs in a drainage passing over the 1st Northwest main entry. At this location the overlying stratum appears to be at it's thinnest, having a total thickness of less than 10 feet. The hole is approximately 15 feet wide by 30 feet long and has an average depth of 5 feet. There is an opening approximately 2 feet high by 4 feet wide and extends an unknown depth into the mine.

The collapsed air shaft (Photo 4) is approximately 2 feet wide by 4 feet long and has a depth of several feet.

2.2 PROJECT PLANNING

The scope of work at this site was to backfill two open adits, one subsidence hole, and one collapsed air shaft. Total revegetation area was approximately 0.1 acre.

2.3 CHRONOLOGICAL HISTORY

1. The work was requested by the Department of State Lands per phone conversation from Ben Mundie on July 25, 1988.

2. On July 26, 1988, a ground reconnaissance was performed on the site by Jim Johnson from Spectrum Engineering.

3. Landowner consent was obtained from Glacier Park Company on July 28, 1988 and from Jack Carlson on July 30, 1988.

PHOTO 1 - BN-25 adit opening.

PHOTO 2 - Gildroy adit opening.

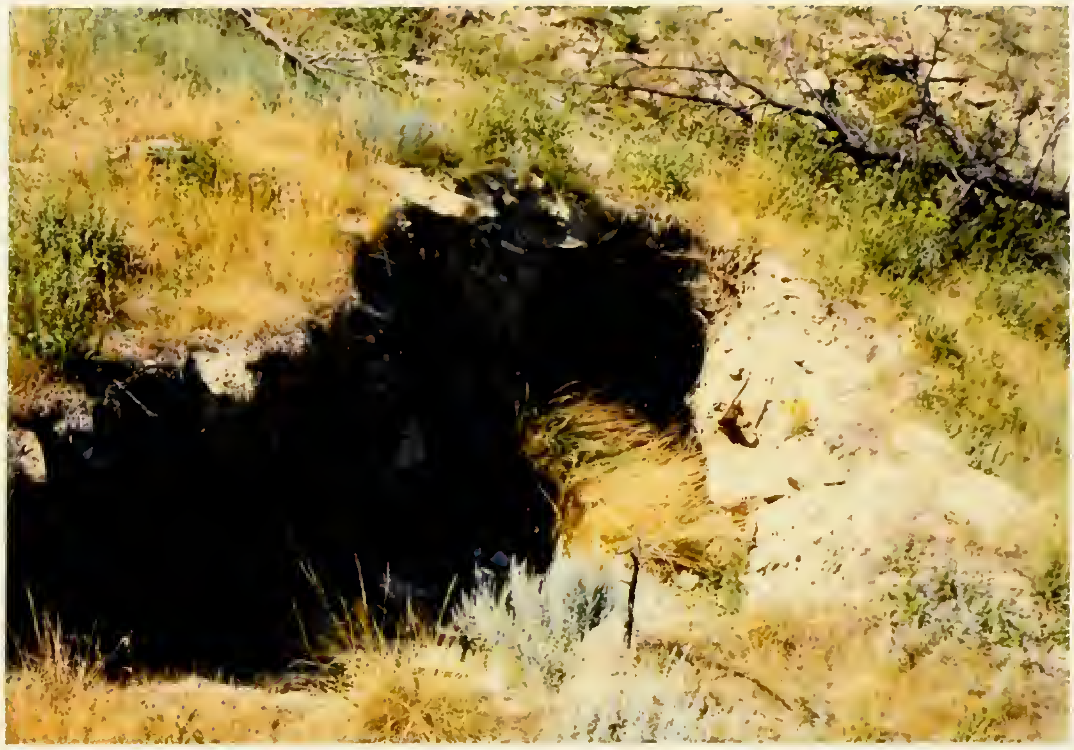


PHOTO 3 - Subsidence hole above 1st Northwest main entry.

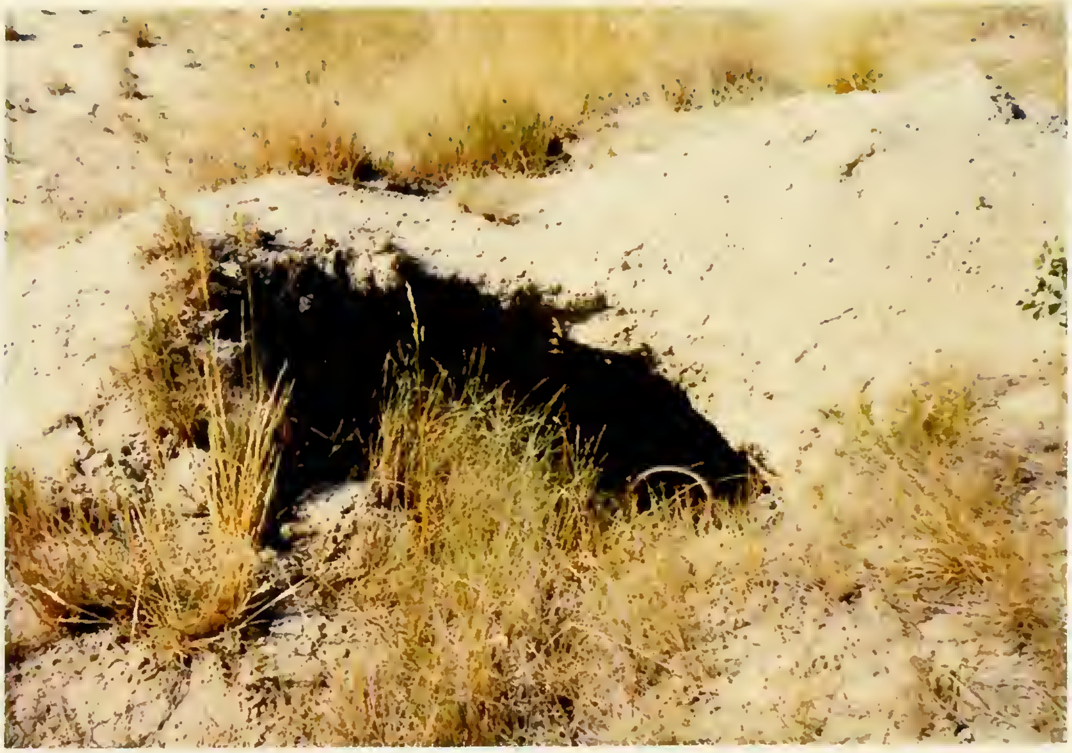


PHOTO 4 - Collapsed air shaft.

4. Jim's Excavating of Billings, Montana was contacted regarding the work to be performed. A pre-bid site visit was made on August 3, 1988. Present were Jim Johnson and Jim McIntosh from Jim's Excavating. A bid of $1,850 was received from Jim McIntosh on August 8 and accepted by Jim Johnson to perform all construction work except revegetation. The Engineer's estimate to perform construction work was $2,000. Site construction was scheduled to begin on August 9, 1988.

5. Maintenance work began as scheduled on August 9, 1988. Site construction, excluding revegetation, was completed on this same date.

6. On November 1, 1988, revegetation and the application of erosion control blanket was performed by Jim Johnson and Bill Wolff, both from Spectrum Engineering, Inc.

2.4 EQUIPMENT

1. John Deere 510 backhoe w/ bucket loader attachment.
2. John Deere 500 front-end loader w/ vibratory soil compactor.
3. Dump truck with water tank (used as water truck).
4. Water pump and hoses.

2.5 DAILY CONSTRUCTION LOG

August 9, 1988 -	Performed all site construction work.
November 1, 1988 -	Prepared seed bed, fertilized, applied seed mixture and placed erosion control blanket.

2.5.1 Description of Reclamation Activities

In reclaiming both adits, a backhoe was utilized to excavate the material lying within the opening to allow for the placement of a boulder barrier within the entrance of each adit upon which fill material was then placed. The fill material was placed in layers, watered, and compacted by a vibratory soil compactor.

At the subsidence hole large rocks were pushed as far as possible into the opening to established a solid foundation upon which fill material was placed. The fill material was placed in layers over the rock barrier, watered, and compacted in a similar manner as the adits. The drainage was re-routed around the subsidence area to minimize its future impact upon the backfilled area.

The air shaft was excavated until the void created by the settling of previous backfill material was removed. The vibratory compactor was used to vibrate the bottom and sides of the excavated shaft to assure that no additional void areas existed. The excavated material from

the air shaft was sufficiently wet enough that water was not necessary to acheive adequate compaction upon its replacement into the shaft. Additional backfill material was borrowed from an adjacent area. All backfill was layered and compacted during backfilling of the air shaft.

The salvaged topsoil was redistributed over the disturbed areas. A seed-bed was prepared using hand rakes and the disturbed areas were fertilized and seeded using the broadcast method. The areas were then mulch with straw which was applied by hand. An erosion control blanket was placed in areas having steep slopes and in the bottom of drainages.

3 SLIDES

The description of the slides taken to document the work performed at the site is found in Appendix A. In addition, the original slides are found at the very back of one volume and black and white copies of the slides are found in all three volumes directly behind the slide descriptions in Appendix A.

4 COST SUMMARY

The site construction work for this statewide maintenance project was completed by Jim's Excavating of Billings, Montana for a fixed price of $1,850. Revegetation supplies and erosion control blanket costs were $600. Total project cost was therefore $2,450.

5 PROJECT SUMMARY

5.1 COMPLETED RECLAMATION

The contractor completed the construction work in one day on-site. The application of erosion control blanket was applied by the site inspector from Spectrum Engineering.

5.2 COMMENTS

All construction work was completed by the Contractor as specified and directed by the site inspector. Spectrum Engineering revegetated the site and applied erosion control blanket.

The project proceeded as planned with no unusual situations happening on this job.

5.3 RECOMMENDATIONS

The site should be visited during June 1989 to evaluate backfill stabilization and the degree of vegetation growth.

APPENDIX A

SLIDE DESCRIPTIONS
BY PROJECT

BN-25/GILDROY AML MAINTENANCE PROJECT
SLIDE DESCRIPTIONS

ASSIGNED NUMBER	DATE TAKEN	SLIDE NUMBER	SUBJECT OR COMMENTS
1	8/8/88	1-1	Collapsed airshaft - General site area.
2	8/8/88	1-2	Collapsed airshaft - looking into opening.
3	8/8/88	1-3	Collapsed airshaft - dozer cut and dirt mound.
4	8/8/88	1-4	Gildroy adit - General site area.
5	8/8/88	1-5	Gildroy adit - view of opening from south Pic #1.
6	8/8/88	1-6	Gildroy adit - view of opening from south Pic #2.
7	8/8/88	1-7	Gildroy adit - view of opening from south Pic #3.
8	8/8/88	1-8	Gildroy adit - view of opening from south Pic #4.
9	8/8/88	1-9	Gildroy adit - view of general site from south.
10	8/8/88	1-10	Gildroy adit - view of general site area from southeast Pic #1.
11	8/8/88	1-11	Gildroy adit - view of general site area from southeast Pic #2.
12	8/8/88	1-12	Subsidence Hole - General site view from northeast.
13	8/8/88	1-13	Subsidence Hole - General site view from west Pic #1.
14	8/8/88	1-14	Subsidence Hole - General site view from west Pic #2.
15	8/8/88	1-15	Gildroy adit - General site view from south Pic #1.
16	8/8/88	1-16	Gildroy adit - General site view from south Pic #2.
17	8/8/88	1-17	Subsidence Hole - Close-up of subsidence from NW Pic #1.

BN-25/GILDROY AML MAINTENANCE PROJECT
SLIDE DESCRIPTIONS

ASSIGNED NUMBER	DATE TAKEN	SLIDE NUMBER	SUBJECT OR COMMENTS
18	8/8/88	1-18	Subsidence Hole - Close-up of subsidence NW Pic #2.
19	8/8/88	1-19	BN-25 Adit - Close-up of site prior to construction Pic #1.
20	8/8/88	1-20	BN-25 Adit - View down into eroded opening.
21	8/8/88	1-21	BN-25 Adit - close-up of eroded opening pre-construction.
22	8/8/88	1-22	BN-25 Adit - General Site area from SW Pic #1.
23	8/8/88	1-23	BN-25 Adit - General Site area from SW Pic #2.
24	8/8/88	1-24	BN-25 Adit - General Site view from west on Road.
25	8/9/88	2-1	BN-25 Adit - Removal of topsoil.
26	8/9/88	2-2	BN-25 Adit - Excavating the adit opening.
27	8/9/88	2-3	BN-25 Adit - Backhoe excavation of adit.
28	8/9/88	2-4	BN-25 Adit - Vibration of fill in adit opening.
29	8/9/88	2-5	BN-25 Adit - Vibration of fill in adit opening.
30	8/9/88	2-6	Subsidence Hole - General view of opening.
31	8/9/88	2-7	Subsidence Hole - Contractor working to borrow area Pic #1.
32	8/9/88	2-8	Subsidence Hole - Contractor working and borrow area Pic #2.
33	8/9/88	2-9	Subsidence Hole - Contractor working and borrow area Pic #3.
34	8/9/88	2-10	BN-25 Adit - Adit re-opened.
35	8/9/88	2-11	BN-25 Adit - Backfilling adit.

BN-25/GILDROY AML MAINTENANCE PROJECT
SLIDE DESCRIPTIONS

ASSIGNED NUMBER	DATE TAKEN	SLIDE NUMBER	SUBJECT OR COMMENTS
36	8/9/88	2-12	BN-25 Adit - Backfilling adit.
37	8/9/88	2-13	BN-25 Adit - Watering backfill.
38	8/9/88	2-14	Subsidence Hole - Cutting new drainage location.
39	8/9/88	2-15	Subsidence Hole - Backfilling Hole Pic #1.
40	8/9/88	2-16	Subsidence Hole - Backfilling Hole Pic #2.
41	8/9/88	2-17	Airshaft - Salvaging topsoil.
42	8/9/88	2-18	Airshaft - Excavating airshaft.
43	8/9/88	2-19	Airshaft - Potential void.
44	8/9/88	2-20	Airshaft - Excavating airshaft cont.
45	8/9/88	2-21	JD 510 Backhoe with loader.
46	8/9/88	2-22	Gildroy Adit - Backhoe transporting plug rock.
47	8/9/88	2-23	Gildroy Adit - Plug rocks in place Pic #1.
48	8/9/88	2-24	Gildroy Adit - Plug rocks in place Pic #2.
49	8/9/88	3-1	Airshaft - Compacting backfill.
50	8/9/88	3-2	Subsidence Hole - water backfill.
51	8/9/88	3-3	Subsidence Hole - Compacting backfill.
52	8/9/88	3-4	Subsidence Hole - Compacting and watering backfill.
53	8/9/88	3-5	Gildroy Adit - Salvaging topsoil from borrow area.
54	8/9/88	3-6	Gildroy Adit - Backfilling adit with borrow.
55	8/9/88	3-7	Gildroy Adit - Compacting backfill Pic #1.
56	8/9/88	3-8	Gildroy Adit - Compacting backfill Pic #2.
57	8/9/88	3-9	Airshaft - Regraded site.

BN-25/GILDROY AML MAINTENANCE PROJECT
SLIDE DESCRIPTIONS

ASSIGNED NUMBER	DATE TAKEN	SLIDE NUMBER	SUBJECT OR COMMENTS
58	8/9/88	3-10	Gildroy Adit - Regraded site Pic #1.
59	8/9/88	3-11	Gildroy Adit - Regraded site Pic #2.
60	8/9/88	3-12	Subsidence Hole - Regraded site.
61	8/9/88	3-13	BN-25 Adit - Regraded site.
62	11/1/88	4-1	BN-25 Adit - Pre-vegetation.
63	11/1/88	4-2	BN-25 Adit - Post seeding/erosion control.
64	11/1/88	4-3	Subsidence Hole - Pre-vegetation.
65	11/1/88	4-4	Subsidence Hole - Post seeding/erosion control.
66	11/1/88	4-5	Gildroy Adit - Post seeding/erosion control.
67	11/1/88	4-6	Air shaft - Pre vegetation.
68	11/1/88	4-7	Air shaft - Post seeding/erosion control.